# The NIH Roadmap for Medical Research

www.nihroadmap.nih.gov

# Why was there a need for a Roadmap?

- Position NIH to address evolving public health challenges
- Accelerate the pace of discoveries
- Develop more rapid translation from laboratories to patients and back

# Evolving Public Health Challenges

Acute to Chronic Conditions

Aging Population

Health Disparities


Emerging Diseases


Biodefense

# NIH opportunities and challenges…

- **Revolutionary and rapid changes in science**
- **Increasing breadth of mission and growth**
- **Complex organization with many units (27 institutes and centers, multiple program offices, e.g., OWHR, OAR, ORD, ...)**
- **Structured by Disease, Organ, Life stage, Disciplines ….**
- **Rapid convergence of science**

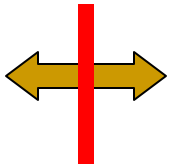
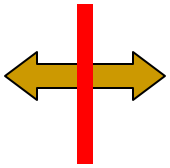
# How was the Roadmap developed?

- Extensive consultations with stakeholders, scientists, health care providers
- Discussions addressed:
  - **What are today's scientific challenges?**
  - **What are the roadblocks to progress?**
  - **What do we need to do to overcome roadblocks?**
  - **What can't be accomplished by any single Institute – but is the responsibility of NIH as a whole?**

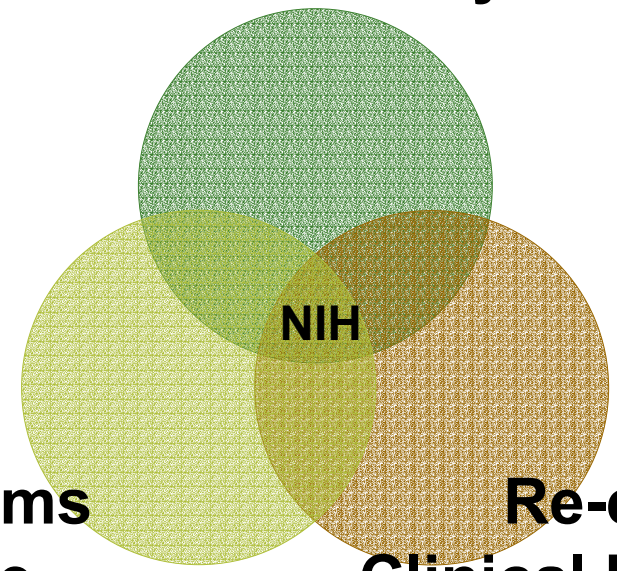
# What is the NIH Roadmap?

- A framework of priorities the NIH as a whole must address in order to optimize its entire research portfolio.
- A set of initiatives that are central to extending the quality of healthy life for people in this country and around the world.
- A vision for a more efficient and productive system of biomedical and behavioral research.

# Roadblocks

Bench  Bedside  Public

# Three themes emerged….



# New Pathways to Discovery


Building Blocks and Pathways

Molecular Libraries

Bioinformatics and Computational Biology

Structural Biology

Nanomedicine

# New Pathways to Discovery

**Initiatives within this theme address technologies and approaches necessary to meet contemporary research challenges.**

Including:

- Grasping the emerging complexity of biology
- Understanding biological systems
- Accessing biological data, technologies, and other scientific resources
- Promoting Multi-and Interdisciplinary research

# Potential Outcomes of Molecular Libraries & Imaging Probes Activities

- Development of research tools (molecular probes and novel assays) to facilitate studies of biology and pathophysiology
- Advances in biological research leading to the identification and validation of novel biological targets for therapeutics development
- Discovery of biological markers to monitor disease progression and to predict treatment response

# National Centers for Biomedical Computing

- Partnerships of:
  - Computer scientists
  - Biomedical computational scientists
  - Experimental and clinical biomedical and behavioral researchers
- Focused on software rather than hardware
- Each National Center to have Driving Biological Projects
- Programs in preparation for partnerships between individual investigators and National Centers

# Research Teams of the Future

**Initiatives within this theme provides mechanisms for interdisciplinary research, high-risk strategies and public-private partnerships.**

Including:

- Encouraging Multi- and Interdisciplinary teams
- Supporting larger, coordinated, resource sharing teams
- Preserving investigator-initiated strategy
- Promoting investigators to take creative, unexplored avenues of research

# *Multi- and Interdisciplinary Research will be Required to Solve the "Puzzle" of Complex Diseases and Conditions*

**Genes**
**Behavior**
**Diet/Nutrition**
**Infectious agents**
**Environment**
**Society**
**???**

# NIH Director's Pioneer Award

- New program to support individuals with untested, potentially groundbreaking ideas!
- Encourages innovation, risk-taking
- Totally new application and peer review process
- Expected to be highly competitive
- Expanded eligibility – (not only traditional biomedical investigators)
- Provides $500,000/year for 5 years

# Reengineering the Clinical Research Enterprise

**Initiatives within this theme address the need for developing new strategies to enhance the infrastructure and capacity for clinical research and reenergize the clinical research workforce.**

Including:

- Promoting better integration of existing clinical research networks, including NECTAR
- Supporting translational research
- Encouraging the development of technologies to improve the assessment of clinical outcomes
- Harmonizing regulatory processes
- Enhancing training for clinical researchers

# Roadmap Funding

(dollars in millions)

| | FY04 | FY05 | FY06 | FY07 | FY08 | FY09 | Total |
|---|---|---|---|---|---|---|---|
| Pathways to Discovery | **65** | **137** | **169** | **182** | **209** | **188** | **948** |
| Research Teams | **27** | **39** | **44** | **92** | **96** | **93** | **390** |
| Clinical Research | **38** | **61** | **120** | **174** | **214** | **227** | **833** |
| Total | **130** | **237** | **332** | **448** | **520** | **507** | **2,172** |

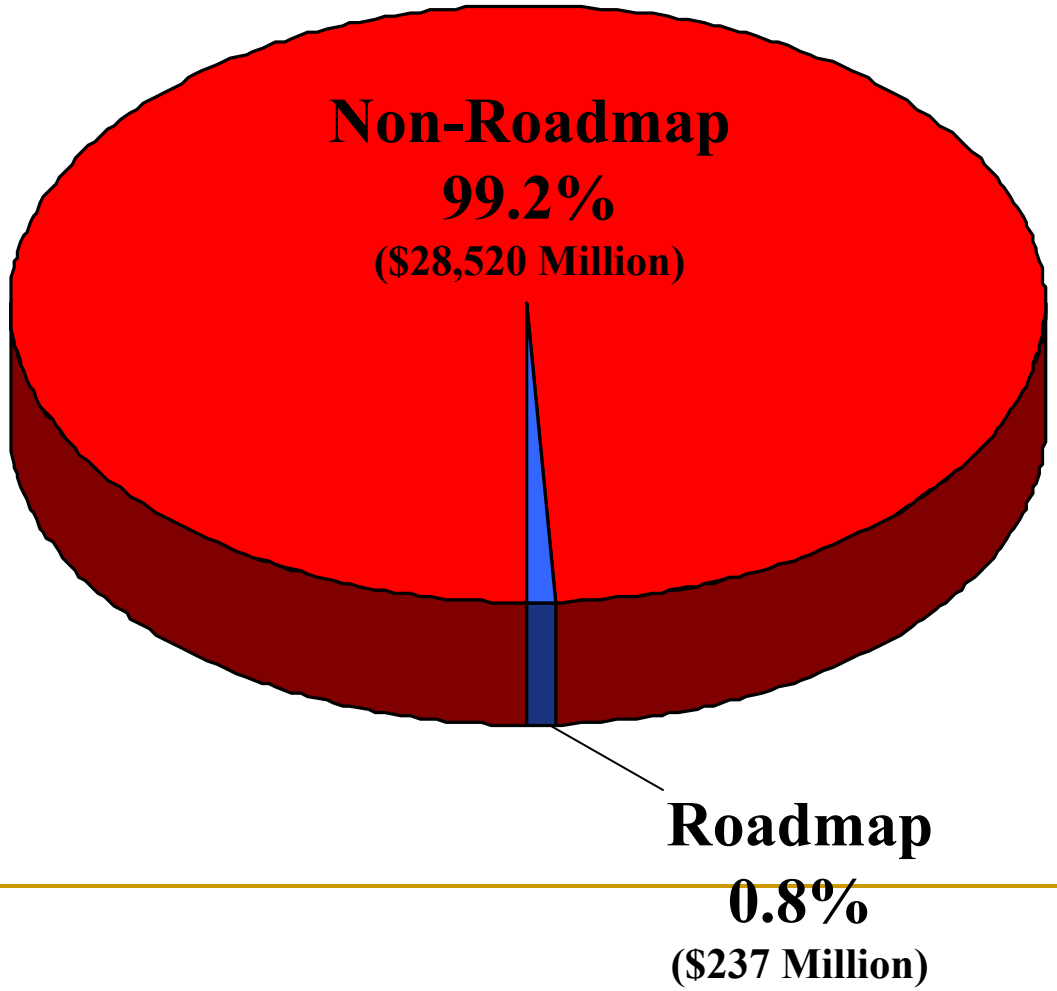
Directors Fund 35 60 ??

**Roadmap initiative is about .9% of NIH budget**

Totals on table may not add due to rounding

# Roadmap
# Percent to Total NIH Budget

**FY 2005 Request = $28,757 Million**



# "How does the NIH Roadmap benefit research funded by NIH ICs?"

- Speeding removal of major and fundamental roadblocks common to all diseases
- Institutes working together to solve issues
- This is a common trans-NIH pool of transforming investments open to all disease areas and all investigators for competition

# Current Activity (as of June, 2004)

**NEW PATHWAYS TO DISCOVERY**

**Building Blocks, Biological Pathways and Networks**

- **Metabolomics Technology Development: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-002.html**
- **National Technology Centers for Networks and Pathways: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-005.html**

**Bioinformatics and Computational Biology**

- **National Centers for Biomedical Computing: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-003.html**

**Structural Biology**

- **Centers for Innovation in Membrane Protein Production: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-009.html**

**Nanomedicine**

- **Nanomedicine Center Concept Development Awards http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-018.htm**

# Current Activity (as of June, 2004)

**Molecular Libraries**

- Molecular Libraries Small Molecule Repository: http://grants1.nih.gov/grants/guide/notice-files/NOT-RM-04-003.html
- Molecular Libraries High Throughput Screening Centers: http://grants1.nih.gov/grants/guide/notice-files/NOT-RM-04-001.html
- Development of High Resolution Probes for Cellular Imaging: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-001.html
- High Throughput Molecular Screening Assay Development: http://grants1.nih.gov/grants/guide/rfa-files/RFA-RM-04-012.html
- Molecular Libraries Screening Centers Network (MLSCN): http://grants1.nih.gov/grants/guide/rfa-files/RFA-RM-04-017.html
- Addendum to RFA-RM-04-017, "Molecular Libraries Screening Centers
- Network (MLSCN) Funds Available" http://grants.nih.gov/grants/guide/notice-files/NOT-RM-04-012.html
- Molecular Libraries Screening Instrumentation: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-020.html

# Current Activity (as of June, 2004)

## RESEARCH TEAMS OF THE FUTURE

### Interdisciplinary Research

- Meetings and Networks for Methodological Development in Interdisciplinary Research: http://grants1.nih.gov/grants/guide/rfa-files/RFA-RM-04-014.html
- Training for a New Interdisciplinary Research Workforce: http://grants1.nih.gov/grants/guide/rfa-files/RFA-RM-04-015.html
- Supplements for Methodological Innovations in the Behavioral and Social Sciences: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-013.html
- Interdisciplinary Health Research Training: Behavior, Environment and Biology: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-010.html
- Short Programs for Interdisciplinary Research Training: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-008.html
- Curriculum Development Award in Interdisciplinary Research: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-007.html
- Exploratory Centers (P20) for Interdisciplinary Research: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-004.html

### High Risk Research

- NIH Director's Pioneer Award: http://grants1.nih.gov/grants/guide/notice-files/NOT-RM-04-007.html

# Current Activity (as of June, 2004)

**RE-ENGINEERING CLINICAL RESEARCH**

- RFTOP-RM-169, Inventory and Evaluation of Clinical Research Networks: http://nihroadmap.nih.gov/grants/NIHRoadmap-INVENTORY-RFTOP169.pdf
- Re-Engineering the Clinical Research Enterprise: Feasibility of Integrating and Expanding Clinical Research Networks: http://nihroadmap.nih.gov/grants/rm-04-23.htm
- Dynamic Assessment of Patient-Reported Chronic Disease Outcomes: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-011.html
- Multidisciplinary Clinical Research Career Development Programs: http://grants.nih.gov/grants/guide/rfa-files/RFA-RM-04-006.html
- Development of a Conceptual Model and Feasibility Assessment of a National Clinical Research Associates Program: http://nihroadmap.nih.gov/grants/NIHRoadmap-RFQ-NCRA-031804.pdf

# Consultation

Participation, consultation, and collaboration are needed from patients, health care providers, foundations, industry, academia, Federal partners …all stakeholders

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# The NIH Roadmap:

## *A Work in Progress*